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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/001,280	11/01/2001	Andrew J. Edwards	50037.57US01	2115

27488 7590 09/26/2005
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EXAMINER

STEVENS, THOMAS H

ART UNIT PAPER NUMBER

2123

DATE MAILED: 09/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

47

Office Action Summary

Application No.

10/001,280

Applicant(s)

EDWARDS ET AL.

Examiner

Thomas H. Stevens

Art Unit

2123

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 November 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11/21/01 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3/11/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-20 were examined.

Claim Objection

2. Claim 1 is objected to by way of the preamble reflecting an apparatus with one limitation reflecting a method claim (lines 9-11).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

4. Claims 1-20 are rejected under 35 U.S.C. 102(a) as being anticipated by Srivastava et al., ("Vulcan—Binary Transformation in a Distributed Environment" (April 2000)) (Hereafter Srivastava). Srivastava discloses distributed computing on the Internet with both static and dynamic code (pg. 3, 2nd paragraph) modification for cross-component analysis and optimization (abstract).

Claim 1. A computerized system comprising: a processing unit; a system memory (pg.5, right column, 4th paragraph) coupled to the processing unit through a system bus; a computer-readable medium coupled to the processing unit through a system bus; a hierarchical (pg. 5, section 2.2 with figure 3) intermediate representation for a heterogeneous (pg. 4, left column, paragraphs 2-3) program in the system memory (pg.5, right column, 4th paragraph); a

Art Unit: 2123

transformation process executing in the processing unit for modifying the hierarchical (pg. 5, section 2.2 with figure 3) intermediate representation to create a modified intermediate representation associated with the heterogeneous (pg. 4, left column, paragraphs 2-3) program; a dynamic modification (pg. 7, section 3.2) process executing in the processing unit; and an application program interface executed from the computer-readable medium by the processing unit, wherein the dynamic modification (pg. 7, section 3.2) process calls the application program interface to cause the processing unit to modify the system memory (pg.5, right column, 4th paragraph) associated with the heterogeneous (pg. 4, left column, paragraphs 2-3) programming in the system memory (pg.5, right column, 4th paragraph) based on the modified intermediate representation.

Claim 2. The computerized system of Claim 1, (pg.5, right column, 4th paragraph; pg. 7, section 3.2) wherein the dynamic modification (pg. 7, section 3.2) process further calls the application program interface to cause the processing unit to suspend (pg. 3, right column; last paragraph) processing of other programs executing in the system memory (pg.5, right column, 4th paragraph).

Claim 3. The computerized system of Claim 1, (pg.5, right column, 4th paragraph; pg. 7, section 3.2) wherein the dynamic modification (pg. 7, section 3.2) process further calls the application program interface to cause the

Art Unit: 2123

processing unit to resume processing of the other programs executing in the system memory (pg.5, right column, 4th paragraph).

Claim 4. The computerized system of Claim 1, (pg.5, right column, 4th paragraph; pg. 7, section 3.2) wherein modifying the system memory (pg.5, right column, 4th paragraph) associated with the heterogeneous (pg. 4, left column, paragraphs 2-3) program causes the processing unit to change execution flow of the heterogeneous (pg. 4, left column, paragraphs 2-3) program.

Claim 5. The computerized system of Claim 1, (pg.5, right column, 4th paragraph; pg. 7, section 3.2) wherein the heterogeneous (pg. 4, left column, paragraphs 2-3) program is executing on a remote computing device with a remote system memory (pg.5, right column, 4th paragraph), the dynamic modification (pg. 7, section 3.2) process calls the application program interface to cause a remote processing unit to modify the remote system memory (pg.5, right column, 4th paragraph).

Claim 6. The computerized system of Claim 5, (pg.5, right column, 4th paragraph; pg. 7, section 3.2) wherein the dynamic modification (pg. 7, section 3.2) process further calls the application program interface to cause the remote processing unit to suspend (pg. 3, right column, last paragraph) processing of other running programs running in the remote system memory (pg.5, right column, 4th paragraph).

Claim 7. The computerized system of Claim 5, (pg.5, right column, 4th paragraph; pg. 7, section 3.2) wherein the dynamic modification (pg. 7, section 3.2) process further calls the application program interface to cause the remote processing unit to resume processing of the other programs running in the remote system memory (pg.5, right column, 4th paragraph).

Claim 8. An application program interface embodied on a computer-readable medium for execution on a computer in controlling with a hierarchical (pg. 5, section 2.2 with figure 3) intermediate representation of a heterogeneous (pg. 4, left column, paragraphs 2-3) program, the application program interface comprising: a navigation function that returns program information for a specified computing device; a query function that returns information about a program on the specified computing device; a thread (pg. 8, left column, 1st paragraph) management function for controlling execution of other programs on the specified computing device; and a modifier function for modeling the heterogeneous (pg. 4, left column, paragraphs 2-3) program residing in a system memory (pg.5, right column, 4th paragraph) on the specified computing device.

Claim 9. The application program interface of Claim 8, (pg. 5, section 2.2 with figure 3; pg. 4, left column, paragraphs 2-3; pg. 8, left column, 1st paragraph) wherein the navigation function includes: a first program function that returns a first program on the specified computing device.

Claim 10. The application program interface of Claim 8, (pg. 5, section 2.2 with figure 3; pg. 4, left column, paragraphs 2-3; pg. 8, left column, 1st paragraph) wherein the query function includes a counting function that returns a number representing a count of programs executing on the specified computing device (pg. 8, section 4, with figure 8).

Claim 11. The application program interface of Claim 8, (pg. 5, section 2.2 with figure 3; pg. 4, left column, paragraphs 2-3; pg. 8, left column, 1st paragraph) wherein the thread (pg. 8, left column, 1st paragraph) management function includes: a suspend (pg. 3, right column, last paragraph) function that suspends (pg. 3, right column, last paragraph) other programs from executing on the specified computing device; and a resume function that resumes the execution of the other programs on the specified computing device (pg.7, section 3.2, left column, 2nd paragraph, "suspends all threads in the process...").

Claim 12. The application program interface of Claim 8, wherein the modifier function includes a patch function that overwrites a portion of the system memory (pg.5, right column, 4th paragraph) originally storing part of the heterogeneous (pg. 4, left column, paragraphs 2-3) program with a new binary code (pg. 3, 2nd paragraph) for the heterogeneous (pg. 4, left column, paragraphs 2-3) program.

Art Unit: 2123

Claim 13. The application program interface of Claim 8, (pg. 5, section 2.2 with figure 3; pg. 4, left column, paragraphs 2-3; pg. 8, left column, 1st paragraph) wherein the modifier function includes an injector function that writes a new binary code (pg. 3, 2nd paragraph) in a portion of the system memory (pg.5, right column, 4th paragraph) that did not originally store an original binary code (pg. 3, 2nd paragraph) for the heterogeneous (pg. 4, left column, paragraphs 2-3) program, and that writes jump instruction in a first location of the system memory (pg.5, right column, 4th paragraph) that stored the original binary code (pg. 3, 2nd paragraph), the new binary code (pg. 3, 2nd paragraph) being a modification to the original binary code (pg. 3, 2nd paragraph) and the jump instruction transferring execution to the new binary code (pg. 3, 2nd paragraph).

Claim 14. The application program interface of Claim 8, (pg. 5, section 2.2 with figure 3; pg. 4, left column, paragraphs 2-3; pg. 8, left column, 1st paragraph) wherein the specified computing device is a remote (pg.3 , Internet where the computer devices would be remote by nature) computing device.

Claim 15. An application program interface embodied on a computer-readable medium for execution on a computer (pg. 4, right column, bullet 6, inherent since these product are for personal computer), the application program interface comprising: a first set of functions for creating a hierarchical (pg. 5, section 2.2 with figure 3) internal representation of a heterogeneous (pg. 4, left column, paragraphs 2-3) program and for modeling the hierarchical (pg. 5, section 2.2

Art Unit: 2123

with figure 3) internal representation to create a modified internal representation; and a second set of functions for dynamically modifying a system memory (pg.5, right column, 4th paragraph) in which the heterogeneous (pg. 4, left column, paragraphs 2-3) program is executing, the system memory (pg.5, right column, 4th paragraph) being modified based on the modified internal representation of the heterogeneous (pg. 4, left column, paragraphs 2-3) program.

Claim 16. The application program interface of Claim 15, (pg. 4, right column, bullet 6, inherent since these product are for personal computer; pg. 5, section 2.2 with figure 3; pg.5, right column, 4th paragraph; pg. 4, left column, paragraphs 2-3) wherein the second set further includes functions for controlling processing of other programs executing in the system memory (pg.5, right column, 4th paragraph).

Claim 17. The application program interface of Claim 15, (pg. 4, right column, bullet 6, inherent since these product are for personal computer; pg. 5, section 2.2 with figure 3; pg.5, right column, 4th paragraph; pg. 4, left column, paragraphs 2-3) wherein the second set further includes functions for changing an execution flow (pg. 7, right column 1st paragraph, last sentence) of the heterogeneous (pg. 4, left column, paragraphs 2-3) program.

Claim 18. The application program interface of Claim 15, (pg. 4, right column, bullet 6, inherent since these product are for personal computer; pg. 5, section 2.2 with figure 3; pg.5, right column, 4th paragraph; pg. 4, left column,

Art Unit: 2123

paragraphs 2-3) further comprising a third set of functions for modifying a remote system memory (pg.5, right column, 4th paragraph) if the heterogeneous (pg. 4, left column, paragraphs 2-3) program is executing in a remote system memory (pg.5, right column, 4th paragraph) on a remote computer.

Claim 19. A computer-readable medium having computer-executable instructions stored thereon to provide an interface to a hierarchical (pg. 5, section 2.2 with figure 3) intermediate representation of a heterogeneous (pg. 4, left column, paragraphs 2-3) program comprising: an instruction application interface exposed by an instruction element in the hierarchy for navigating, querying, modifying, translating, and committing an instruction in the intermediate representation; a block (pg. 5, section 2.2 with figure 3) application interface exposed by a block (pg. 5, section 2.2 with figure 3) element in the hierarchy for navigating, querying, modifying, and committing a block (pg. 5, section 2.2 with figure 3) in the intermediate representation; a procedure application interface exposed by a procedure element in the hierarchy (pg. 5, right column, figure 3 with section 2.2, paragraphs 2-3) for navigating, querying, modifying, and committing a procedure in the intermediate representation (pg. 7, section 3.2 Dynamic Modification, the procedure of suspending threads); a program application interface exposed by a program element in the hierarchy for modifying and querying the intermediate representation for the heterogeneous (pg. 4, left column, paragraphs 2-3) program; a system application interface exposed by a system elements in the

Art Unit: 2123

hierarchy(pg. 5, right column, figure 3 with section 2.2, paragraphs 2-3) for determining the program element available on a computing device .

Claim 20. The computer-readable medium of claim 1(pg.5, right column, 4th paragraph; pg. 7, section 3.2) comprising a remote application interface for determining the program element when the computing device is a remote computing device (pg.3 , Internet where the computer devices would be remote by nature).


Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mr. Tom Stevens whose telephone number is 571-272-3715, Monday-Friday (8:00 am- 4:30 pm) or contact Supervisor Mr. Leo Picard at (571) 272-3749. Central Fax number is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application should be directed to the TC 2100 Group receptionist: 571-272-2100.

September 20, 2005

THS


Paul L. Rodriguez 9/21/05
Primary Examiner
Art Unit 2125